

REMARKS/ARGUMENTS

Claims 1-22 are pending. Claims 21 and 22 have been added, and claims 1-20 remain unchanged. No new matter has been added to the new claims.

Claims 1, 2, 5, 7, 10, 12 and 14-17 are rejected under 35 U.S.C. § 102(e) as being anticipated by Garverick et al. (6,543,286).

Claims 3, 4, 8, 9, 11 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Garverick et al. in view of Wu et al. (6,542,653).

Claims 6, 13, 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Garverick et al. in view of Patel et al. (2002-0132389).

As amended, all the pending claims of the subject application comply with all requirements of 35 U.S.C. Accordingly, Applicants request examination and allowance of all pending claims.

Claim Rejections - 35 U.S.C. § 102(e)

Claim 1 recites "a plurality of hinges, each hinge connected to the spacer support frame and to a micro mirror plate" among other elements. Applicants respectfully submit that the cited reference does not teach or suggest at least these claim elements.

Garverick discusses a micromirror array including a number of cells including mirror plates mounted on gimbal structures. As illustrated in figure 1 of Garverick, the cell includes two electrodes 122 associated with a pair of torsion beams 114 along a minor axis and two electrodes 120 associated with a pair of torsion beams 118 along a major axis perpendicular to the minor axis. (Garverick at column 1, lines 32-45). The gimbal structure design shown by Garverick does not teach or suggest that each hinge is "connected to the spacer support frame and to a micro mirror plate," as recited by claim 1.

On the contrary, referring to figure 1 of Garverick, each of the first set of hinges 114 is not connected to a micro mirror plate. The hinges 114 are connected to the support structure 112 and the outer frame 110, but are not connected to the mirror plate 116. Moreover, each of the second set of hinges 118 is not connected to the spacer support frame. Referring once again to figure 1 of Garverick, the hinges 118 are connected to the outer frame 110 and the mirror plate 116, but are not connected to the support structure 112. Thus, the gimbal structure of Garverick does not teach or suggest that each hinge is connected to the spacer support frame and to a micro mirror plate. For at least these reasons, claim 1 is in a condition for allowance.

Claims 2 and 5, which depend from claim 1, are in a condition for allowance, for at least the reasons discussed in relation to claim 1, as well as for the additional limitations they recite.

Claim 7 recites a "single-chip spatial light modulator for use in a video display" comprising "a control circuitry substrate including ... a control circuitry layer including line memory buffers and a pulse width modulation array" among other elements. Applicants respectfully submit that the cited reference does not teach or suggest at least these claim elements.

Embodiments of the present invention provide for integration of "several functional components of the control circuitry" on the same substrate, which provides advantages including "improved data transfer rate" as well as "simple and cheap fabrication, and a compact final product." (Specification at pp. 7-8, paragraph [0032]).

Garverick appears to discuss a system in which a microprocessor 150 generates pulse width modulation control signals. (Garverick at col. 8, lines 7-14). However, Garverick does not appear to teach or suggest that the pulse width modulation array is integrated with other elements on a single "control circuitry substrate" as part of a "single-chip spatial light modulator."

On the contrary, Garverick discusses a hybrid package. "Preferably, the microprocessor 150 and oscillator 152 together with the assembled ESA array 140 and driver integrated circuit 144 and perhaps a separate low-voltage control integrated circuit are mounted on a standard substrate carrier, typically formed of plastic or ceramic, with a small number of wire bonds connecting the microprocessor 150 and the periphery of the driver chip 146." (Garverick at col. 6, lines 56-62). Thus, Garverick fails to teach or suggest a "single-chip spatial light modulator" including a single "control circuitry substrate" as recited by claim 7. For at least these reasons, claim 7 is in a condition for allowance.

Claims 10, 12, and 14-16, which depend from claim 7, are in a condition for allowance, for at least the reasons discussed in relation to claim 7, as well as for the additional limitations they recite.

Claim 17 recites "a control circuitry substrate including: a control circuitry layer with control circuitry including a plurality of line memory buffers and a pulse width modulation

array." As discussed in relation to claim 7, Garverick fails to teach or suggest at least these claim elements. For at least these reasons, claim 17 is in a condition for allowance.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 3, 4, and 6, which depend from claim 1, are in a condition for allowance, for at least the reasons discussed in relation to claim 1, as well as for the additional limitations they recite. Moreover, the cited references do not make up for the deficiency in Garverick. For at least these reasons, claims 3, 4, and 6 are in a condition for allowance.

Claims 8, 9, 11, and 13, which depend from claim 7, are in a condition for allowance, for at least the reasons discussed in relation to claim 7, as well as for the additional limitations they recite. Moreover, the cited references do not make up for the deficiency in Garverick. For at least these reasons, claims 8, 9, 11, and 13 are in a condition for allowance.


Claims 18-20, which depend from claim 17, are in a condition for allowance, for at least the reasons discussed in relation to claim 17, as well as for the additional limitations they recite. Moreover, the cited references do not make up for the deficiency in Garverick. For at least these reasons, claims 18-20 are in a condition for allowance.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400, x5518.

Respectfully submitted,


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